

### Abstract

Management of multiple types of empty carriers in automated material handling systems. In one embodiment, an automated material handling system (AMHS) includes a plurality of material carriers including a plurality of empty carriers classified into two or more types and one or more stock areas, each including a plurality of bins for storing material carriers. Each stock area is associated with one or more thresholds for each empty carrier type. The AMHS further includes a control system coupled to a first one of the stock areas for computing an empty percentage for each empty carrier type. The empty percentage for a particular empty carrier type is the percentage of bins of the first one stock area which contain empty carriers of the particular type. The AMHS also includes a transportation system responsive to the control system for selectively moving an empty carrier of a certain carrier type between a staging area and the first stock area based on a comparison of the empty percentage for the certain carrier type to the one or more thresholds of the first stock area for the certain carrier type.

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By: [Signature]  
Name: D. McGruder